cents per string. Others are generally sold in lots not strung. The buyer, however, is not guided in his purchase by the number of sponges on a string, but by what a certain lot will weigh, and the weight is never given, but the buyer must estimate it. Hence practical experience is needed in the purchasing of the sponges.

Sponges are offered for sale on five days of the week at the sponge exchange. They are landed from the vessels, and each cargo is piled up by itself. The weight is entirely unknown. The buyers examine the lots, and each man hands in a private tender, in writing, for the lot, and it is awarded, on opening the tenders, to the highest bidder. A successful buyer must be able to judge correctly by his eye and experience just how many pounds of good sponges he will be able to get out of a given lot when it has been carefully worked up. Nearly all the sponges are bought by resident agents, who buy for New York, London, and Paris houses, shipping the goods to their principals. A few merchants handle sponges on their own account.

Along the southern coast of Florida the sponge business is in a flourishing condition, and has been for years, with its headquarters at Key West, and hundreds of the people of that vicinity are engaged all the time in gathering, curing, and shipping sponges. Many natives of the Bahamas visit Florida from time to time and find employment in the sponge business; though all the crews necessary to introduce the business on the Gulf coast of Florida, men well versed in the industry, can be obtained easily at Key West, without the least necessity of importing labor into the State from the Bahamas. It is said that the sponges growing along the Florida coast are much superior to the sponges of the Bahamas.

THE KHEVSURS OF THE CAUCASUS.

MONSIEUR V. DINGELSTEDT has published some notes on this singular people in *Le Globe* (tome xxx. No. 2), an abstract of which appears in the *Scottish Geographical Magazine* for September. The name is derived from the Georgian word *Khévi*, signifying a mountain gorge, and is unknown among the people to whom it is applied. They call themselves after the different localities they inhabit not by any collective name. Their country is situated to the east of the Pass of the Cross, on both slopes of the central chain of the Caucasus, to the west and north-west of the mountain Borbalo, and has an area of about 570 square miles. Its mean altitude is over 6,500 feet, and it contains peaks rising above the limit of eternal snow, which, in the central part of the Caucasus, is at an elevation of 10,600 feet. About seven thousand persons inhabit this wild region, in a bleak climate, where the cultivable soil is of small extent and the vegetation poor.

In the summer the Khevsurs feed cattle and sheep on the rich grass which springs up on the mountain slopes, but in the winter forage is difficult to obtain, and the animals and their owners often succumb to famine. The Khevsurs, in contrast to the other mountaineers of the Caucasus, are plain in appearance, of rather short stature, and with large hands and feet, though they are muscular and agile. A great variety is observable in the color of their eyes and hair, their stature, and even in the form of their skulls, and this diversity may be ascribed to a mixture of race. Their original ancestors were probably Georgians, who, some time before the twelfth century, took refuge in the mountains. These were probably joined by men of other races, who, for various reasons were obliged to fly from their native lands, or were attracted by the life of brigandage which the Khevsurs led up to recent times. Their Georgian ancestors had reached a fairly high standard of civilization, but in their savage solitudes the Khevsurs have relapsed into semi-barbarism, and have now a fierce and defiant expression. They wear coats of mail, brassarts, and helmets, like cavaliers of the Middle Ages. They live in communities consisting of one or several villages, under the nominal authority of a chief called a *Khevisberi*. These villages are grouped around some spot supposed to be sacred to a saint, and this religious bond has taken the place of the old tribal unity.

The Chevsurs have a vague belief in one God, but they never address him in prayer, and their rites consist in sacrifices and invocations to various saints, Christian and pagan, among which Saint George is held in high repute. Most of the work falls on the women, while the men spend their time in idleness. Marriages are concluded either with Christian or pagan rites. The wife brings with her a dowry of cattle and a trousseau. The offspring of the cattle belong to the house of the husband, but the original herd is the private property of the wife, and any loss must be made good by the husband. The wife has no share in the property of her husband at his decease. It is divided among his male heirs, and, in default of these, goes to the community. So, too, the wife's property is divided among her sons, her trousseau only being left to her daughters.

Monogamy is the rule, but custom permits a man to repudiate his wife when she grows old, or if she bears no children, and to take another, provided that he gives an indemnity of five or six cows to the parents of the former. In other cases divorce is easily effected, but is seldom resorted to. The dead are buried in vast caves. They are dressed in coats of mail, and sometimes musical instruments are placed in their hands. Festivals are held in their honor five times, or, in the case of poor families, twice a year, when there is a lavish display of hospitality, and quarrels frequently take place.

NOTES AND NEWS.

IN the last paragraph on page 192 of *Science* for Oct. 2, "An initial velocity of seven miles a second," should read, "An initial velocity of six miles a second."

— Amos E. Woodward, late assistant geologist on the Geological Survey of Missouri, died of pneumonia at Castle, Mont., in the last week of September. During his connection with the Missouri survey, Mr. Woodward's special subject was the mineral waters of the State, though he also conducted much other work in the laboratory. He was a painstaking, ambitious, and most industrious worker, and was held in high esteem by those who knew him.

— The flesh-colored, hydrated manganese sulphide which is obtained by the addition of ammonium sulphide to a solution of manganize chloride, on standing, or more rapidly on boiling with water, changes color to green. This green sulphide when washed and dried yields a powder of the same color, which is also unstable, being oxidized by mere exposure to air. It is, however, according to P. de Clermont and H. Guiot (*Mining and Engineering Journ.*), rendered permanent by removing its water of hydration, which is effected by heating it moderately in a current of hydrogen sulphide, carbon dioxide, or ammonia. Thus prepared it is suitable for application in paper staining, etc.

— Dr. L. Webster Fox is of opinion, says *Nature*, that savage races possess the perception of color to a greater degree than do civilized races. In a lecture lately delivered before the Franklin Institute, Philadelphia, he stated that he had just concluded an examination of 250 Indian children, of whom 100 were boys. Had he selected 100 white boys from various parts of the United States, he would have found at least five of them color-blind: among the Indian boys he did not discover a single case of color-blindness. Some years ago he examined 250 Indian boys, and found two color-blind, a very low percentage when compared with the whites. Among the Indian girls he did not find any. Considering that only two females in every 1,000 among whites are color-blind, he does not think it surprising that he did not find any examples among the Indian girls.

— Some time ago the Field Naturalists' Club of Victoria organized an excursion to the Kent group of islands, the object being to collect specimens, and to determine whether the group is most nearly related with Victoria, to which it is closest geographically, or with Tasmania. At the annual *conversazione* of the club, held recently, as we learn from *Nature*, Mr. C. A. Topp, the retiring president, referred to the results of the expedition. The bulk of the fauna and flora were found to be common to Victoria and Tasmania, but there were six or seven varieties of birds peculiar to Tasmania to two peculiar to Victoria. The conclusion was that the islands had been separated from Tasmania after that island was disjoined from the mainland. Among the plants, several

forms were found varying somewhat from the typical forms of the same species on the mainland; while it was interesting to find that the arboreal short-eared opossum had changed his habits so far as to feed on the leaves of the eucalypt, and to keep to the ground.

— M. de Groot of the Dutch Colonial Government in the East Indies has made an interesting communication to the Geographical Society of Amsterdam on the subject of Chinese emigration, which is briefly quoted in the Proceedings of the Royal Geographical Society for September. According to the writer, the causes of this emigration are not to be found in the excess of population, but simply in the poverty of the soil of the provinces whence these emigrants come. It is the bare, mountainous valleys of the eastern part of China which furnish the emigrants to the English, Spanish, and Dutch colonies; to California, Australia, and especially to Indo-China and Cochin-China. The prevailing formation of the ground in their native regions is granitic; the soil yields hardly anything, and the rainfall is slight. Potatoes and vegetables of very bad quality are the only food that can be extracted from the earth. In some favored spots a little rice, but of a poor description, can be grown. Another cause of the emigration is disafforestation. Wood is very scarce, and consequently very dear. Vegetation being almost entirely plucked up, the formation of a new layer of humus is absolutely impossible. The population of these regions is therefore compelled to seek subsistence in other countries. The writer is of opinion that as soon as China sets herself in earnest to construct a network of railways and to carry out other great works, the stream of emigration, which is causing so much anxiety in many parts of the world, will be stopped, as the people will find in the interior of their own country the work and means of livelihood which they now seek for elsewhere.

— The Illinois experiment station is located at Champaign, on a black prairie soil, upon which fertilizers, except barn-yard manure, have failed to produce any increase in wheat. The following experiments, made on soils of a different character, are reported by Professor Morrow in a recent bulletin of the station: For three years past experiments with commercial fertilizers on wheat have been tried at points farther south than the station grounds. For 1890–91 the trials were made on the farms of W. W. Bowler, Flora; A. M. Woodward & Co., Odin; Chas. Stephani, Nashville; and Fred. Helms, Wilderman, near Belleville. These are all not far from latitude 38° 30′, and, except the last-named, on the level light-colored soils characteristic of that region. Mr. Helms's soil is darker colored and naturally very fertile. Mr. Bowler's land had been in grass from 1883 to 1888. In 1889 it produced about forty bushels of corn per acre. In 1890 it was sown to oats, but the crop failed. The land at Odin had been thrown out of cultivation until 1889, when it produced a fair crop of corn. In 1890 it was sown to oats, which failed to produce a crop. The land at Nashville had been in cultivation about forty years — in corn in 1883 and 1884, oats in 1885, wheat in 1886, oats in 1887, wheat in 1888 and 1889, and in oats in 1890. Mr. Helms's land had been cultivated by him twenty-two years without manure. It was in wheat on clover sod in 1889–90, and yielded about thirty bushels per acre. In each case, except at Flora, nine plats two by twenty rods, containing one-fourth of an acre each, were used. To plat 1 in each case five wagon-loads of barnyard manure were applied, and 100 pounds of glue-factory superphosphate to plats 3, 4, 6, 7, and 9. The barnyard manure and superphosphate were applied before sowing. In each case the land had the treatment usual in the region in preparing for wheat. The wheat was sown with a drill about Sept. 20, 1890. The winter was favorable for the crop. When visited at the last of April, as well as at harvest time, the effect of the barnyard manure in stimulating growth was very apparent; that of the superphosphate, less so. The wheat was carefully harvested and threshed from the shock, except at Flora, where Mr. Bowler was compelled to put it in stack and thresh Aug. 20. Mr. Helms estimates that his crop was damaged one-fifth or more by plant lice. The wheat at Nashville was measured; at the other places, weighed. It was all of good quality. The average results are given as follows: At Flora, 20 loads manure, 25.47 bushels wheat per acre; 400 pounds superphosphate, 17.83 bushels wheat; unfertilized, 19.71 bushels wheat. Odin, 20 loads manure, 25.47 bushels wheat; 400 pounds superphosphate, 19.85 bushels wheat; unfertilized, 19.64 bushels. Nashville, 20 loads manure, 28.00 bushels; 400 pounds superphosphate, 16.00 bushels; unfertilized, 10.00 bushels. Belleville, 20 loads manure, 40.70 bushels; 400 pounds superphosphate, 39.85 bushels; unfertilized, 36.65 bushels.

— While the International Marine Congress was in session in Washington in 1889, the question was raised as to the proper power of the running lights used by vessels of the merchant marine. No agreement could be reached, as the Congress was without accurate knowledge as to the intensity of the lights proposed. It has been decided that the side-lights of a vessel under way, which should be red on one side and green on the other, ought to be sufficiently powerful to be seen two miles, while the white top lights should be seen five miles. The Light-House Board was formally requested to ascertain the needed intensity of the proposed lights by actual experiment. The board therefore appointed a committee of five, consisting of two light-house inspectors, who are respectively a captain and a commander in the United States navy, two light-house engineers, who are respectively a major and a captain of the Corps of Engineers in the United States army, with a member of the Light-House Board as its chairman. The committee did its work by making actual tests at night, running a steamer at Gardiner's Bay, Long Island Sound, over a measured course, and sighting from various known distances, white, red, and green lights, the actual intensity of which had been determined by photometric measurement. This committee of specialists was attended by a staff of experts to put and keep the apparatus in thorough order. Two nights, each of a different character as to clearness, were spent in making these experiments, and two tabular statements showing actual and accurate results have been prepared. The result is that all the tests have been averaged, the personal equation of the observers has been eliminated, and a full report of the results attained has been made. From this it appears, stated in brief, that to be practically seen in fairly clear weather for five miles, a white light must have an intensity of thirty candle power, and that red and green lights to be seen two miles must each have a power of forty candles.

— A recent report by the United States consul at Martinique gives some details concerning the hurricane at that island on August 18. He states that early on that morning the sky presented a very leaden appearance, decidedly threatening, with occasional gusts of variable winds, mostly from the east-north east. The temperature was very oppressive during the entire day. The barometer varied only slightly, but was a little higher than usual until afternoon, when it commenced to fall, at first gradually and then very rapidly. The storm struck the east side of the island at about 6 P.M., rushing through the ravines with terrible force, and destroying every thing in its path. On the elevated plains the ruin was most complete. One very peculiar feature of the hurricane was the deafness experienced by every one during the storm, possibly the result of the reduced barometric pressure. During the cyclone the wind veered from east-north-east to south-south east, the latter being most destructive. During the storm there were incessant flashes of sheet lightning, unaccompanied by thunder, and immediately after the storm there were two distinct shocks of earthquake, at intervals of about five seconds. Early in September the consul visited Trinité, and all the way the destruction was most complete, the trees and vegetation looking as though there had been a forest fire, although without the charred appearance. The thermometer ranged from 90° to 100° F. during the storm. There was a deluge of rain, one account stating that over four inches fell in a few hours that evening. Nine-tenths of the buildings throughout the island were unroofed. The loss of life was small in St. Pierre, but large in the interior towns. The total loss of life, so far as reliable information can be obtained, was seven hundred, and the loss of property was enormous. All the fruit, the main reliance of the laboring class, was destroyed, and prices of provisions have advanced three hundred per cent. Every vessel was wrecked or badly damaged, fifty sail in all. A clipping from a Martinique newspaper states

that the barometer fell 27.95 inches at Fort de France. At St. Pierre the wind blew a hurricane from the north-east, from 7 to 8.15 P.M., when the rain suddenly stopped and it fell calm, the sky becoming clear. This marked the passage of the centre. At 8.30 the hurricane recommenced from the south-west, and blew with great fury until 9.30, the barometer rising and the wind shifting to the south-east. At 10.30 there were still strong squalls from the south-east, but the storm was practically over.

—Professor Frank H. Bigelow, at one time professor of mathematics and astronomy at Racine College, has been appointed a professor in the United States Weather Bureau.

— The Salisbury expedition to the Galapagos Islands, headed by Dr. Baur of Clark University, has returned to Worcester, Mass. It brings a large collection of scientific specimens.

— Dr. Alfred S. Bolles, superintendent of the Pennsylvania Bureau of Statistics at Harrisburg, and editor of the *Bankers' Magazine*, has been elected lecturer in mercantile law and banking in the University of Pennsylvania. Dr. John I. Reese has resigned the chair of medical jurisprudence and toxicology in the same university. In the Wharton School of Finance, Mr. L. K. Stein of Johns Hopkins University has been elected assistant, Dr. Sydney Sherwood, a Princeton graduate, becomes instructor in finance, and Dr. Frederick W. Moore of Yale, instructor in sociology.

— An instrument for optical comparison of transparent liquids, named a "liquoscope," has been recently devised by M. Sonden of Stockholm (*Nature*, Sept. 17). Two hollow prisms holding the liquids are separated by a partition at right angles to the refracting angle. The whole is placed in a vessel filled with glycerine, and which allows of vision in a horizontal direction through plane glass plates. The deflection of the light rays through the prisms is thus compensated. So long as the two liquids have the same optical action, one sees a distinct mark (say a black paper strip on a window) as a straight connected line; but its halves are relatively displaced if the liquids have different refractive powers. The amount of displacement gives a measure of the difference, the positive or negative nature of which also appears from the direction of displacement. The author recommends his apparatus for chemical purposes, especially comparison and testing of fats and oils, analysis of glycerine, etc., and detection of margarine in butter, margarine greatly lowering the index of refraction.

— In a paper published in the current number of the Journal of the Anthropological Society, Mr. J. J. Lister refers to the great development of the arms and chests of the natives of Fakaofu (Bowditch Island, Union Group). According to *Nature*, he thinks it may be due to the fact that they are obliged to go about so much in canoes. Sir Joseph Lister, who took part in the discussion which followed the reading of this paper, remarked that he would not have expected the frequently repeated action of paddling to produce lengthening of the arms, although he could understand its resulting in increased size of chest. He pointed out that the natives of Tonga were also accustomed to use canoes, and hence it was not clear that the phenomenon could be traced to the cause assigned. Mr. Lister replied that, although the Tongans use canoes, canoe work is not so essential a part of their lives as it is in the case of the natives of Fakaofu. The natives of the island of Tongatabu have many avocations quite apart from the sea, for they live on an island twenty two miles long, and many villages are situated some distance from the water. The natives of Fakaofu, on the other hand, live crowded together on a small islet situated on a ring of reefs, and to meet almost every need of their lives they must do more or less paddling.

— Herr Fleitmann's experiments in soldering iron with nickel have yielded some important results with regard to the volatility and atomic penetration of the former metal, says *Iron*. The adhesion of the two metals was so intense that it became impossible to separate them by mechanical action, and chemical analysis proved a perfect assimilation, although the soldering had been effected at a temperature of from 500° to 600° below the fusing point. Other tests established the volatility of iron when heated to cherry redness. Two plates of iron and nickel, superposed, were submitted to the same degree of heat; the iron passed into the nickel to a notable extent without soldering or adhesion of the surfaces resulting. On the whole surface of the sheet of nickel an alloy with the iron was formed, which, in the case of one-millimetre sheets, penetrated to five one-hundredths of their thickness, and contained on the average twenty-four per cent of that metal, the proportion being naturally stronger on the surface. An important fact is that the passage of the iron to the nickel is not reciprocal. While the combination disclosed itself on the surface of the nickel plate by the argentiferous lustre of an alloy of iron with fifty per cent of nickel, the iron plate remained intact, and preserved the sombre appearance which it had received from the scaling.

— In 1857 Wilhelm Struve, founder of the Pulkova Observatory, entered into negotiations with Prussia, Belgium, and England, with a view to the measurement of an arc of parallel of latitude stretching across the four countries. The Governments named consented, in 1863, to communicate the results of their measurements to Otto, son and successor of Wilhelm Struve, in order that he might co-ordinate them with the Russian triangulation. The measurement of the arc is not yet completed, but some particulars concerning the work have been published in a recent issue of the *Scottish Geographical Magazine*. The parallel chosen is that of 52° north latitude, and the angular extension of the arc is 59° 30′. The portion which lies within the bounds of Russia in Europe measures rather more than 1,682 miles in length, and gives the average length of a degree of longitude as about 42.68 miles. The geodetic measurements proved beyond a doubt that the length of a degree is not always the same, that, in fact, the parallel of 52° is not a circle, but is composed of elliptical arcs. Bases of 4 to 9 versts have been measured with such care as to reduce the limit of error to the hundredth part of a millimetre, yet the lengths of a degree of longitude in different parts of the parallel show differences ranging up to 410 feet. It is expected that the measurement will be continued across Siberia to the Pacific.

— *Nature* states that Herr Hufner has lately pointed out some of the biological bearings of the fact (observed in experiment along with Herr Albrecht) that long light-waves are much more strongly absorbed by water than short ones. If the lower marine animals had, like man, the liveliest light-perception with yellow rays, and a certain intensity of light were necessary to them, they must live at a less depth than if their visual organs were most strongly affected by short-waved rays. Thus, e.g., if they needed as much yellow light as that of the full moon, they could not live deeper than 177 metres (say, 590 feet). Yet they are found at all depths where food, oxygen, and a suitable temperature exist. On the other hand, the existence of plants having chlorophyll depends on light, and we might expect that the distribution of non-parasitic plants would be very limited, which is the case, no plant-organisms being found under 200 fathoms. Green plants assimilate best in yellow light; and supposing plants to assimilate in moonlight they would find their limit at the above depth (177 metres). But while yellow is here weakened to 0.0000016 of its brightness, indigo blue has still 0.007829 of its original strength, and the assimilation with blue rays will be 660 times as strong as with yellow. Different colored marine plants react differently according to the color of light, and they have accordingly different distribution in depth.

— The American Press Company of Baltimore announces a work entitled "The Builders of a Great Country." It will be a book of representative Americans. The proposed work will contain biographies and portraits of those who are recognized as the representative Americans of the age in church and state, politics and commerce, science and manufactures, literature and art, press and progress.

— An important work on the science and practice of medicine is announced by the Librairie G. Masson, Paris, under the editorship of Doctors Charcot, Bouchard, and Brissaud. "Le Traité de Médecine" will form six volumes, to be published within a maximum period of two years. The first volume, just ready, includes general infectious pathology, diseases of nutrition, diseases common to man and animals, and infectious diseases. The second volume will treat of fevers, cutaneous affections, diseases of the blood, and intoxication.